RHIC Status

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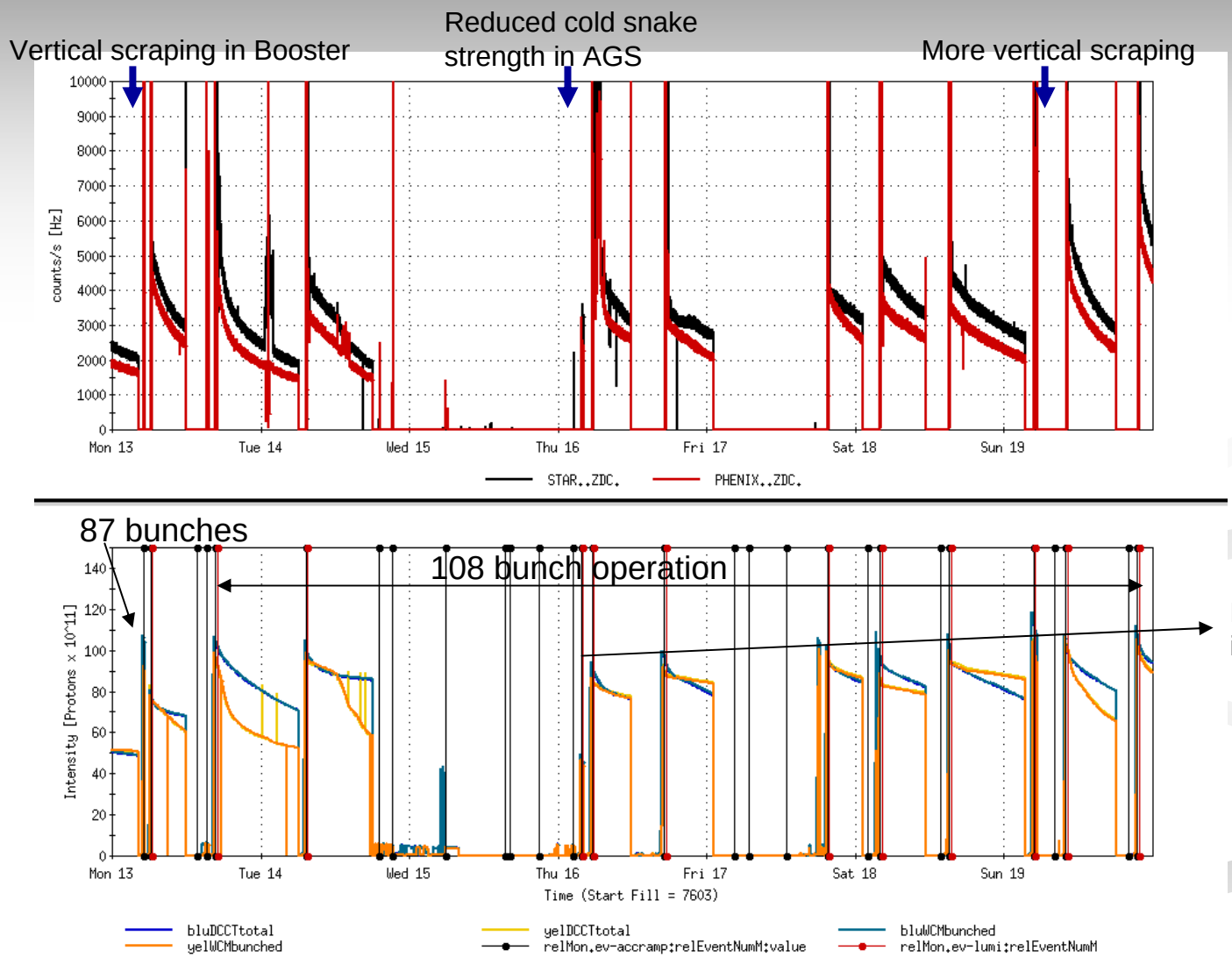
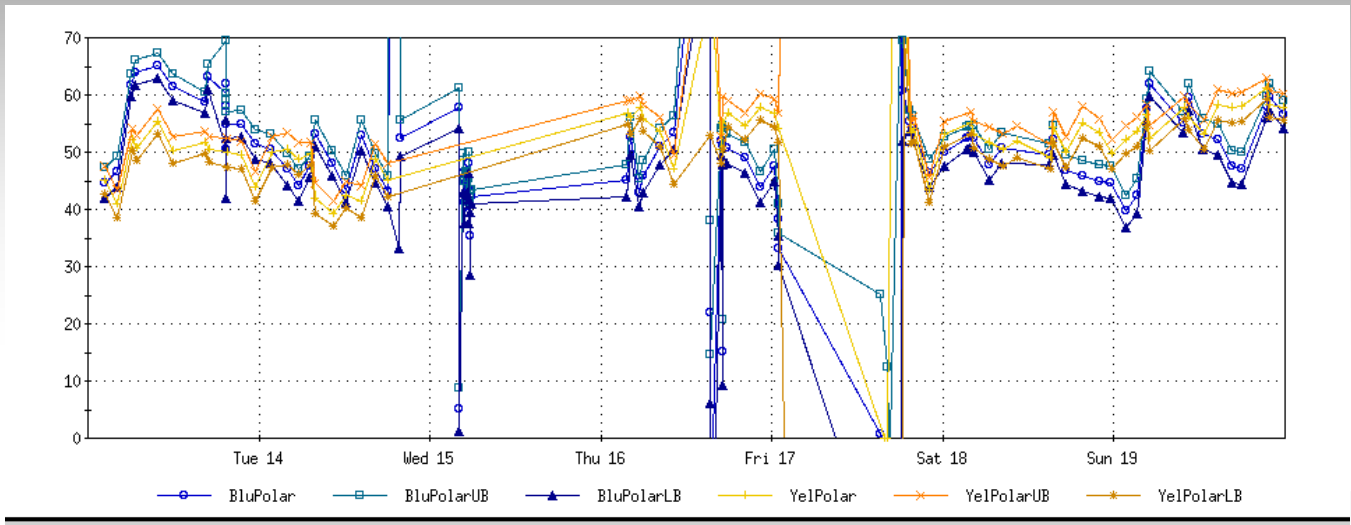
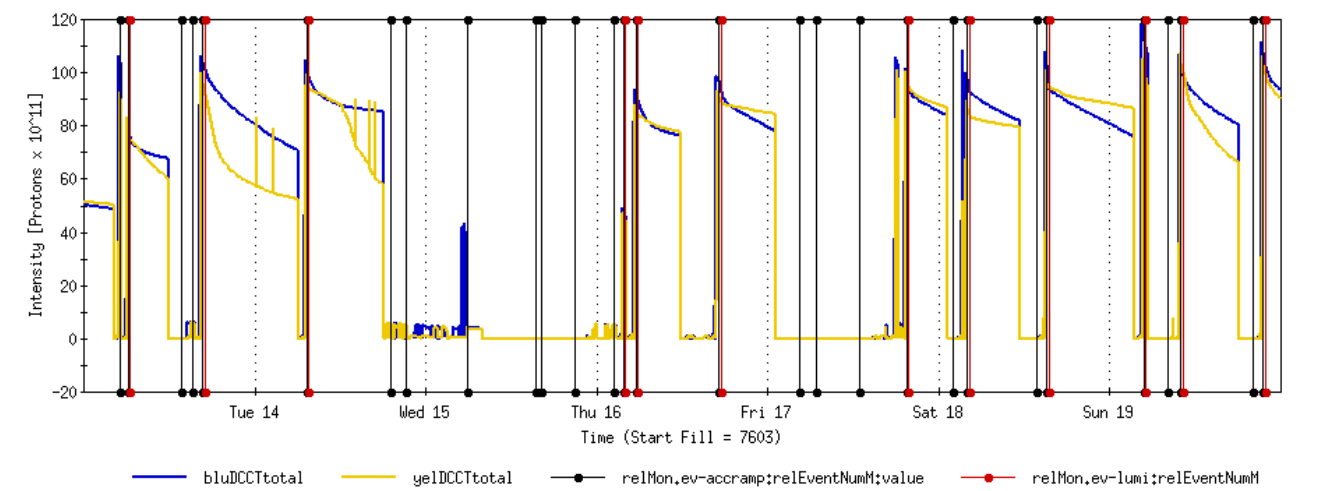
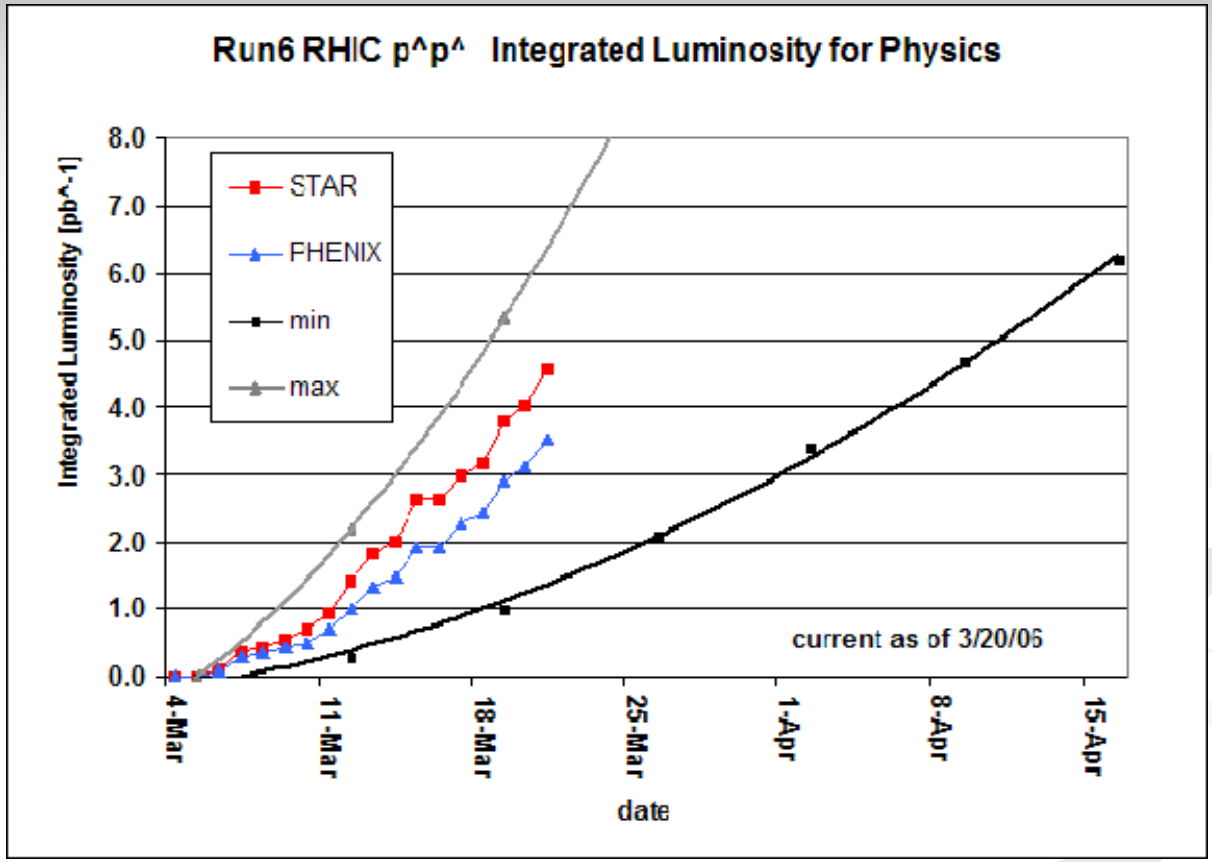
Week 2: Luminosity

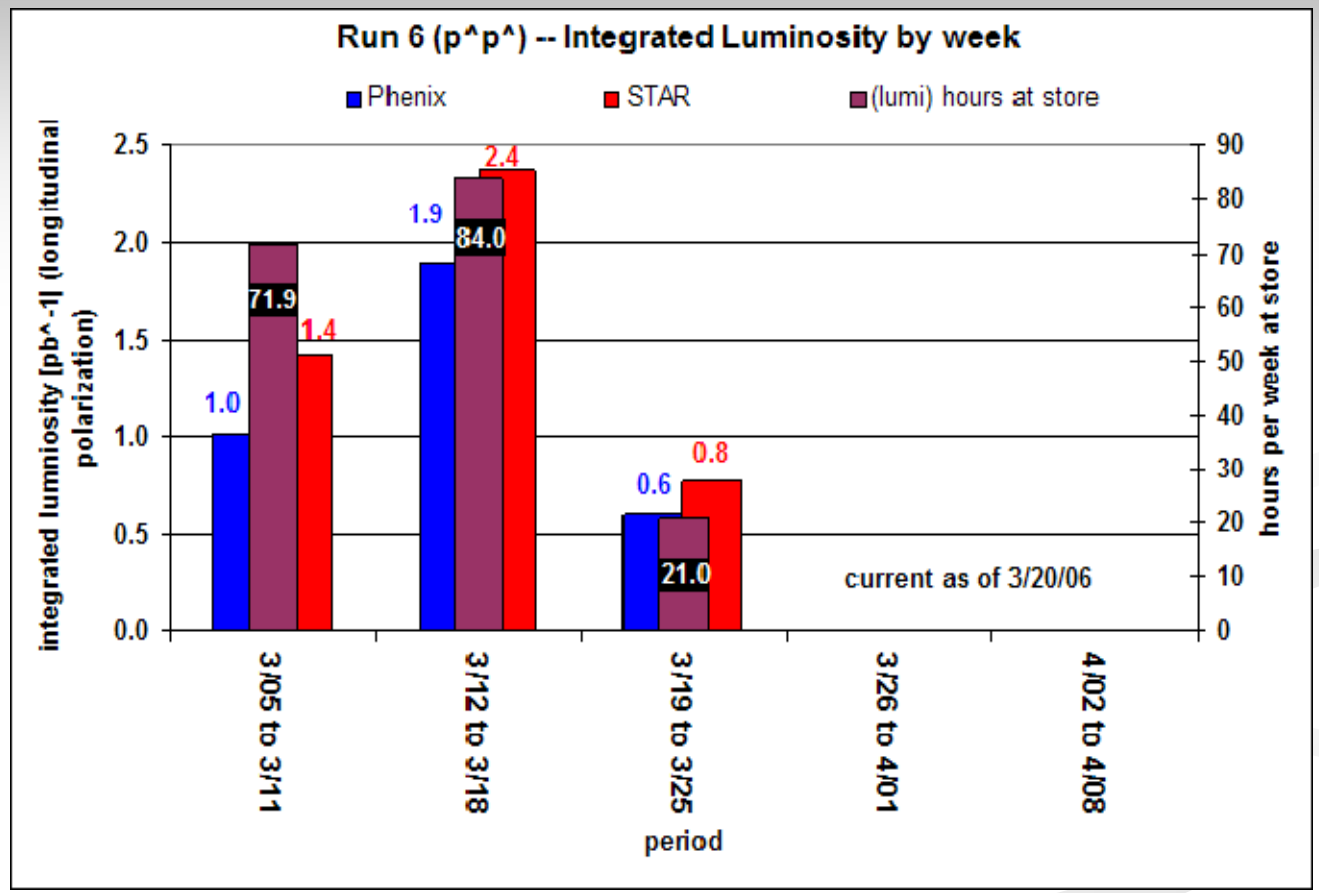


Week 2: Polarization






Run6 RHIC p^p^ Integrated Luminosity for Physics
Integrated Luminosity [pb^-1]
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
STAR
PHENIX
min
max
current as of 3/20/06
4-Mar
11-Mar
18-Mar
25-Mar
1-Apr
8-Apr
15-Apr
date


Run 6 (p^p^) -- Integrated Luminosity by week
Phenix
STAR
(lumi) hours at store
integrated lumniosity [pb^-1] (longitudinal polarization)
hours per week at store
2.5
2.0
1.5
1.0
0.5
0.0
90
80
70
60
50
40
30
20
10
0
1.0
71.9
1.4
1.9
84.0
2.4
0.6
21.0
0.8
current as of 3/20/06
3/05 to 3/11
3/12 to 3/18
3/19 to 3/25
3/26 to 4/01
4/02 to 4/08
period

Machine Developments

- Main developments during the week:
  - Injector improvements:
    - Vertical scraping in Booster -> considerably reduced vertical emittance
    - Reduced cold snake in AGS
  - Tightened longitudinal relative phase on the ramp
  - Tightened transverse emittance control. Regular mesurements:
    AGS IPM, ATR measurements, PolarScan, RHIC IPM
  - Slow bunch intensity increase (to 1.1e11 p/bunch at the injection)

- Tasks for this week:
  - Vernier Scans
  - Reaching beam-beam limit
  - Beam-beam remedies: Working point optimization, Initial 10 Hz feedback tests

Vernier Scans

- Preliminary results from Angelika from the two vernier scans:
  - beam sizes in STAR and PHENIX are the same within 5 mum (about the stat. resolution)
  - emittances are 36 pi mm mrad horizontally and 35 pi mm mrad vertically
  - both IRs were very well centered (at most 30 mum off the optimum)
  - there's practically no background in the ZDC data/rate

- The emittances are more consistent with PHENIX collsion rates at last year calibration of ZDC cross-section (0.4mb)
- Hour-glass effect (luminosity vs bunch length) should be taken into account to evaluate emittances more accurately.